

EL

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/586,351	TANAKA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kajli Prince	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant's Application filed on 14 July 2006.
2. ☒ The allowed claim(s) is/are 1-18.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date <u>12/1/06, 7/14/06</u></li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date _____</li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____</li> </ol> |
|---|--|

**DETAILED ACTION**

**EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with William P. Berridge on 18 July 2007.

The application has been amended as follows:

Claim 18, lines 1-2, "An optically controlled optical-path-switching-type optical signal transmission apparatus according to claim 11" has been changed to -- A method of switching optical paths for optical signals --.

***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. §119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

The prior art documents submitted by applicant in the Information Disclosure Statement filed on 14 July 2006 and 1 December 2006 have all been considered and made of record (note the attached copy of form PTO-1449).

Art Unit: 2874

***Drawings***

Twenty-five (25) sheets of formal drawings were filed on 14 July 2006 and have been accepted by the Examiner.

***Specification***

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Allowable Subject Matter***

Claims 1-18 are allowed. The following is an examiner's statement of reasons for allowance: The prior art cited on attached form PTO-892 is the most relevant prior art known. However, the invention of claims 1-18 distinguishes over the prior art of record because none of the references either alone or in combination disclose or render obvious [a]n optically controlled optica-path-switching-type optical signal transmission apparatus, as defined in claims 1-4, comprising: a control light beam light source for irradiating a control light beam having two (2) or more wavelengths that are different from those of the signal light beam; two (2) or more light-absorbing layer films for transmitting the signal light beam and selectively absorbing respectively only one (1) specific wavelength of the control light beam; and two (2) or more thermal lens forming devices for causing a converged signal light beam to exit while maintaining beam convergence, or for varying the angle of divergence of the signal light beam and for causing the signal beam to exit, in response to the presence or absence of irradiation of the one (1) specific wavelength of the control light beam, by using a thermal lens containing the light-absorbing layer films and based on a distribution of refractive index produced reversibly caused by temperature increase generated in an area of the light-absorbing layer film that has absorbed

Art Unit: 2874

the one (1) specific wavelength of the control light beam and in the periphery thereof, in addition to the other claimed limitations. Claims 5-10 and 14-17 depend from claims 1-4.

Further, the invention of claims 1-18 distinguishes over the prior art of record because none of the references either alone or in combination disclose or render obvious [a] method of switching optical paths for optical signal, as defined in claims 11-13, comprising the steps of: converging and irradiating respectively a control light beam and a signal light beam to each of two (2) or more light-absorbing layer films that transmits the signal light beam and absorbs selectively only one specific wavelength of the control light beam; and at each of two (2) or more thermal lens forming devices each containing the light-absorbing layer films, by using a thermal lens based on a distribution of refractive index produced reversibly caused by temperature increase generated in an area of the light-absorbing layer film that has absorbed the one (1) specific wavelength of the control light beam and in the periphery thereof, in response to the presence or absence of irradiation of the control light beam having the one (1) specific wavelength, causing the converged signal light beam to exit as converged or to exit varying the divergence angle thereof, in addition to the other claimed steps. Claim 18 depends from claim 11. A discussion of the cited prior art follows.

Hiraga et al. (US 6,452,710 B1) discloses an optical element, optical control device and optical control method wherein a laser light or low output is used as a control light. A light absorption film is used to perform intensity modulation and/or light flux density modulation utilizing a thermal lens effect based on a reversible refractive index distribution produced by respectively converging a control light and a signal light of different wavelengths and irradiating them to the light absorption film, the wavelength of the control light being selected from the

Art Unit: 2874

absorption band of the light absorption film, and bringing at least the control light to a focus in the light absorption film so as to produce a temperature rise in the region of the light absorption film which absorbed the control light and the surrounding region, the thickness of the light absorption film not exceeding twice the confocal length of the converged control light.

However, Hiraga et al. does not teach or suggest using two or more light-absorbing layer films for transmitting a signal light beam and selectively absorbing only one of two specific wavelength of the control light beam, in order that a signal light beam may exit the film and either maintain its beam convergence or widen its beam convergence.

Hence, there is no reason or suggestion for one of ordinary skill in the art to use the prior art to make the invention of claims 1-18.


### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kajli Prince whose telephone number is (571) 270-1280. The examiner can normally be reached on Monday & Wednesday-Friday, 6:00am to 5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2874

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Kajli Prince  
KEVIN WOOD  
PRIMARY PATENT EXAMINER